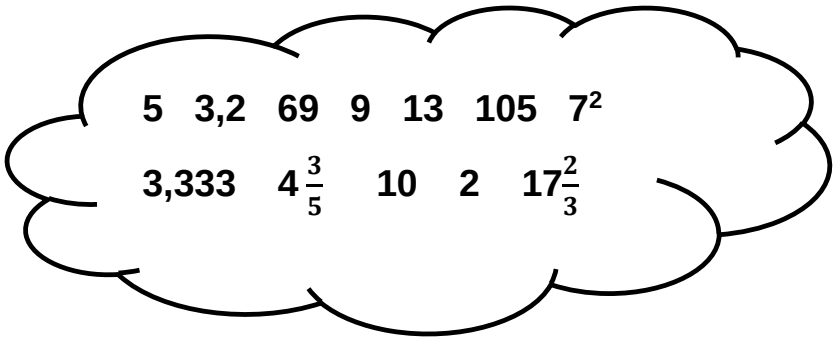
E-classroom	**NAME:**					
	Gr 8		**Date:**		**Time**	45 mins
CAPS Reference	**1-1 Whole Numbers** (Term 1)					
Topic	**1-1-1** Prime Numbers					

1. Think First! [5 mins]

Which numbers in the cloud below are Prime numbers?



2. Go ahead! [15 mins]

2.1 The sieve of Eratosthenes.

2.1.1 Copy the number grid below.
2.1.2 Cross out **1.**
2.1.3 Cross out all the **multiples of 2**, but do not cross out 2.
2.1.4 Cross out all the **multiples of 3**, but do not cross out 3.
2.1.5 Cross out all the **multiples of 5**, but do not cross out 5.
2.1.6 Cross out all the **multiples of 7**, but do not cross out 7.
2.1.7 Colour the squares with numbers that are **NOT** crossed out.

These numbers are the **PRIME NUMBERS** less than 100.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

2.2 Learn by heart the prime numbers between 1 and 20.

3. Got it? [5 mins]

Prime Numbers are numbers with only two factors; 1 and themselves.
The eight numbers from 1 to 20 which are Prime numbers are: 2, 3, 5, 7, 11, 13, 17 and 19.
What about 1? 1 is not a prime number because it only has 1 factor.

4. Go ahead! [15 mins]

4.1 Write the Prime numbers between 40 and 80.

4.2 Write down the numbers from the list below that are prime numbers.
3; 9; 15; 27; 37; 49; 5; 3; 67; 77; 84; 91

4.3 Which of the multiplications below will give a prime number?
Give a reason for your answers.

4.3.1 2×7 **4.3.2** 1×11 **4.3.3** 6×7 **4.3.4** 20×1
4.3.5 1×19 **4.3.6** 13×3 **4.3.7** 3×1 **4.3.8** 99×1

4.4 Calculate each of the following expressions and say whether the answer is a prime number or not.

4.4.1 $2 \times 24 + 3$ **4.4.2** $7 + 11 + 13$ **4.4.3** $(50 + 3) \times 2$
4.4.4 $38 \div 2$ **4.4.5** $6 \times 15 + 3$ **4.4.6** $(77 - 2) \div 3$

5. Check your work! [5 mins]

6. Going further! [own time]

Eratosthenes of Cyrene lived from 276 BC to 194 BC

Use the link below or the QR code above to help you find the answer.
http://www-history.mcs.st-andrews.ac.uk/Mathematicians/Eratosthenes.html

Eratosthenes came from a place called Cyrene in North Africa.
-His early life was spent in Athens where he was well known in many fields including poetry, athletics astronomy, history as well as mathematics.
-He was one of the first people to make measurements of the size of the earth.
-Eratosthenes' method for finding prime numbers is known as the sieve of Eratosthenes.

6.1 Find out more about Eratosthenes.
Write 5 or six sentences about Eratosthenes.

6.2 Draw another sieve and find out the prime numbers between 100 and 200.

6.3 **Challenge:** How did Eratosthenes measure the circumference of the earth?

